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# United States Patent [19]

Chen

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[54] **HOLDER ASSEMBLY FOR A SHOWER HEAD**

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[51] **Int. Cl.**[6] ..... **A47K 7/04**

[52] **U.S. Cl.** ..... **4/570**; 4/605; 4/615; 248/124.2

[58] **Field of Search** ..... 4/567, 570, 605, 4/615; 248/124.2, 125.9; 239/282, 283

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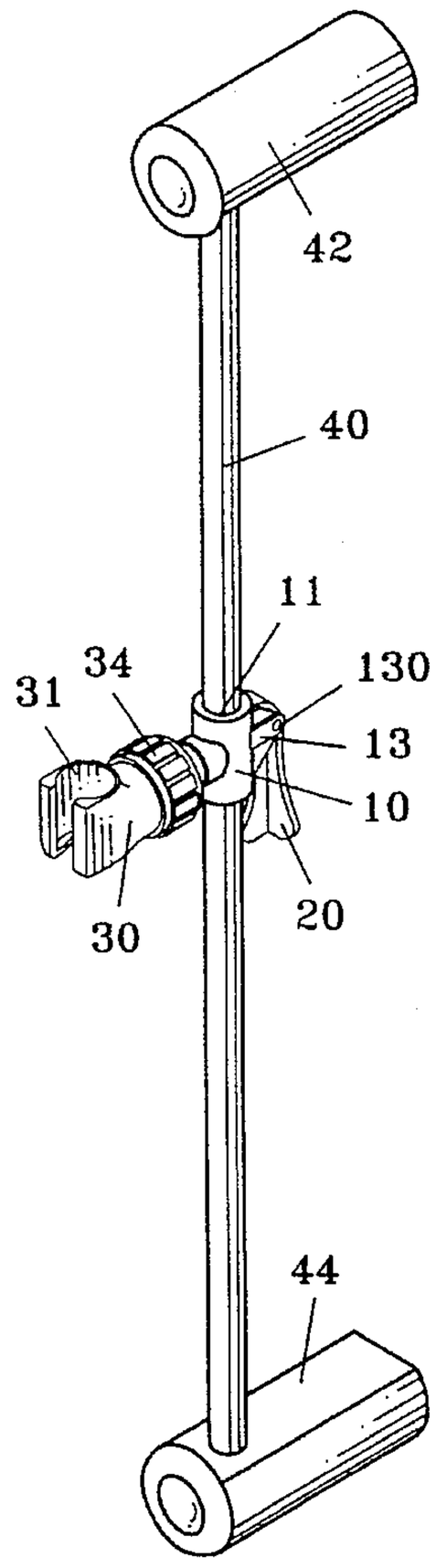
[57] **ABSTRACT**

A holder assembly for a shower arm of a shower head includes a positioning body defining a vertical bore therein through which a vertical rod extends, which, in turn, is mounted to a wall of a bathroom. The positioning body includes an opening defined in an outer periphery thereof and communicated with the vertical bore, a pair of lugs formed on the outer periphery thereof and between which the opening is defined, and a lever pivotally connected to the lugs and including an operative end with an eccentric operative edge. A connecting part extends from the outer periphery of the positioning body. A shower arm holder includes a holder ring for removably holding a shower arm and is attached to the shower arm holder to the connecting part of the positioning body. The positioning body is frictionally held in position on the vertical rod when the lever is in a first, secured position. The positioning body is movable relative to the vertical rod when the lever is in a second, released position.

**1 Claim, 8 Drawing Sheets**



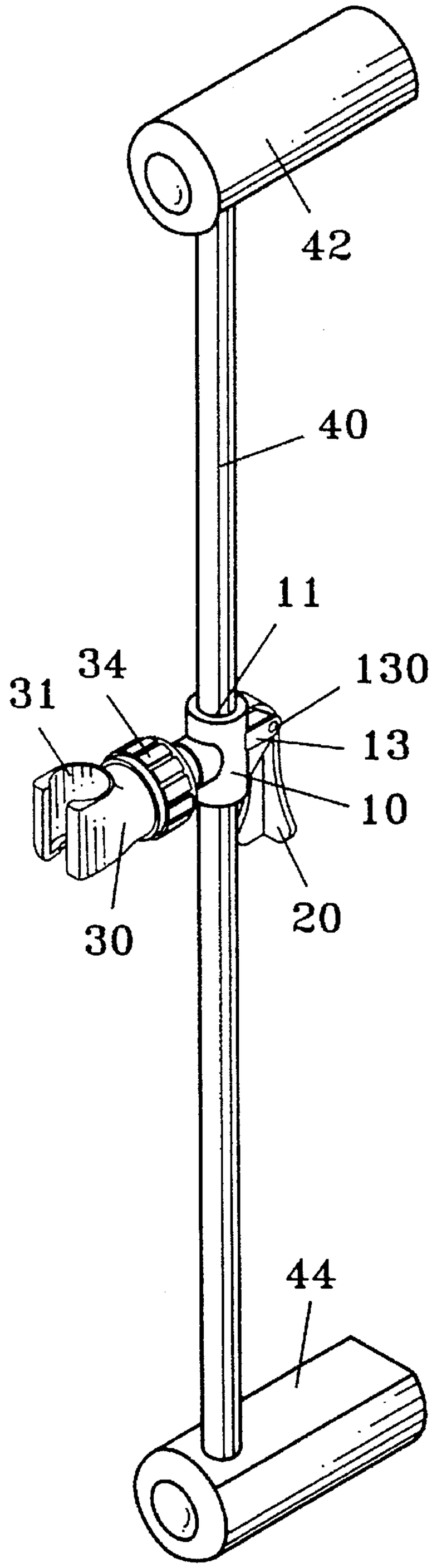



FIG. 1

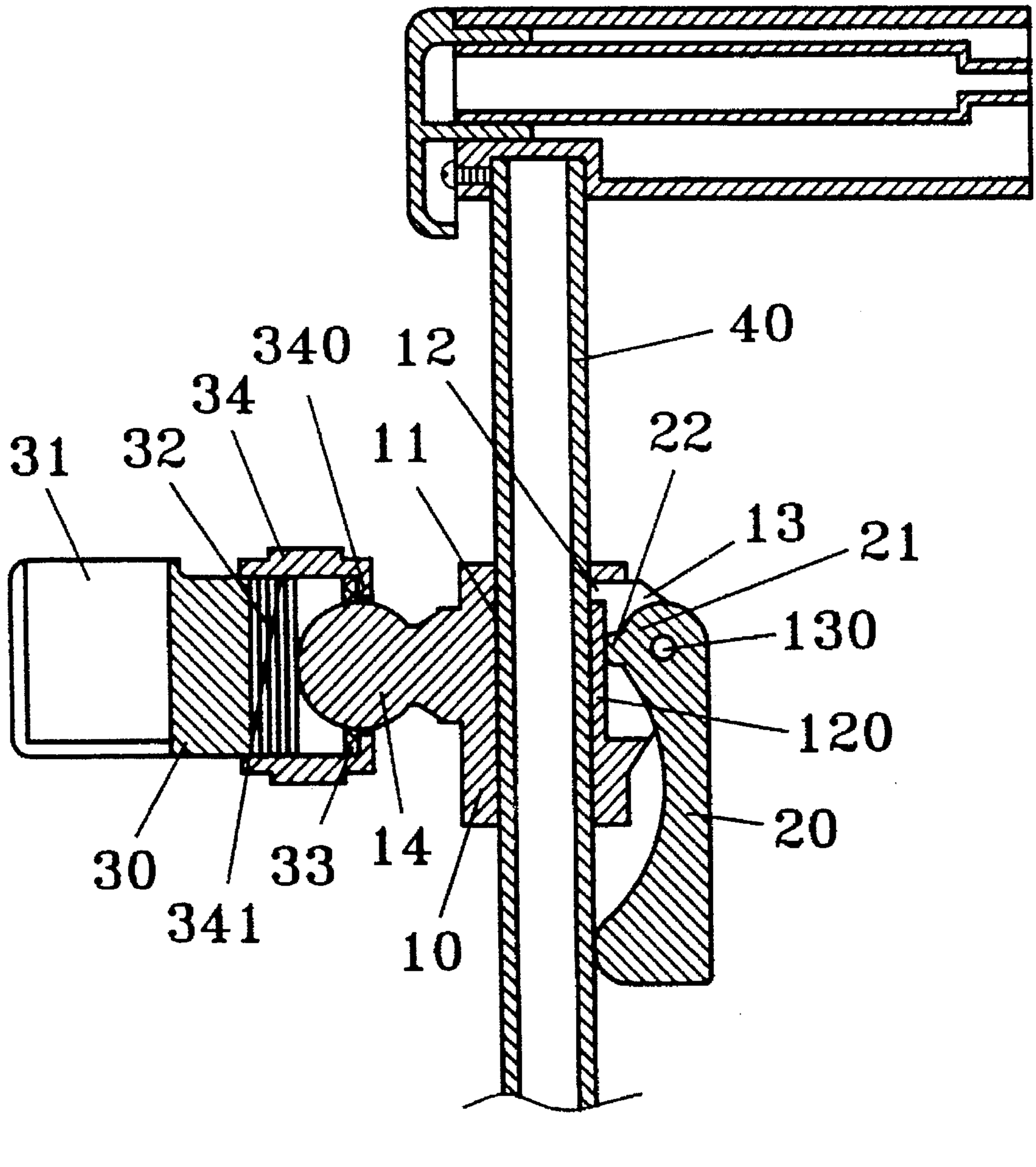



FIG.2

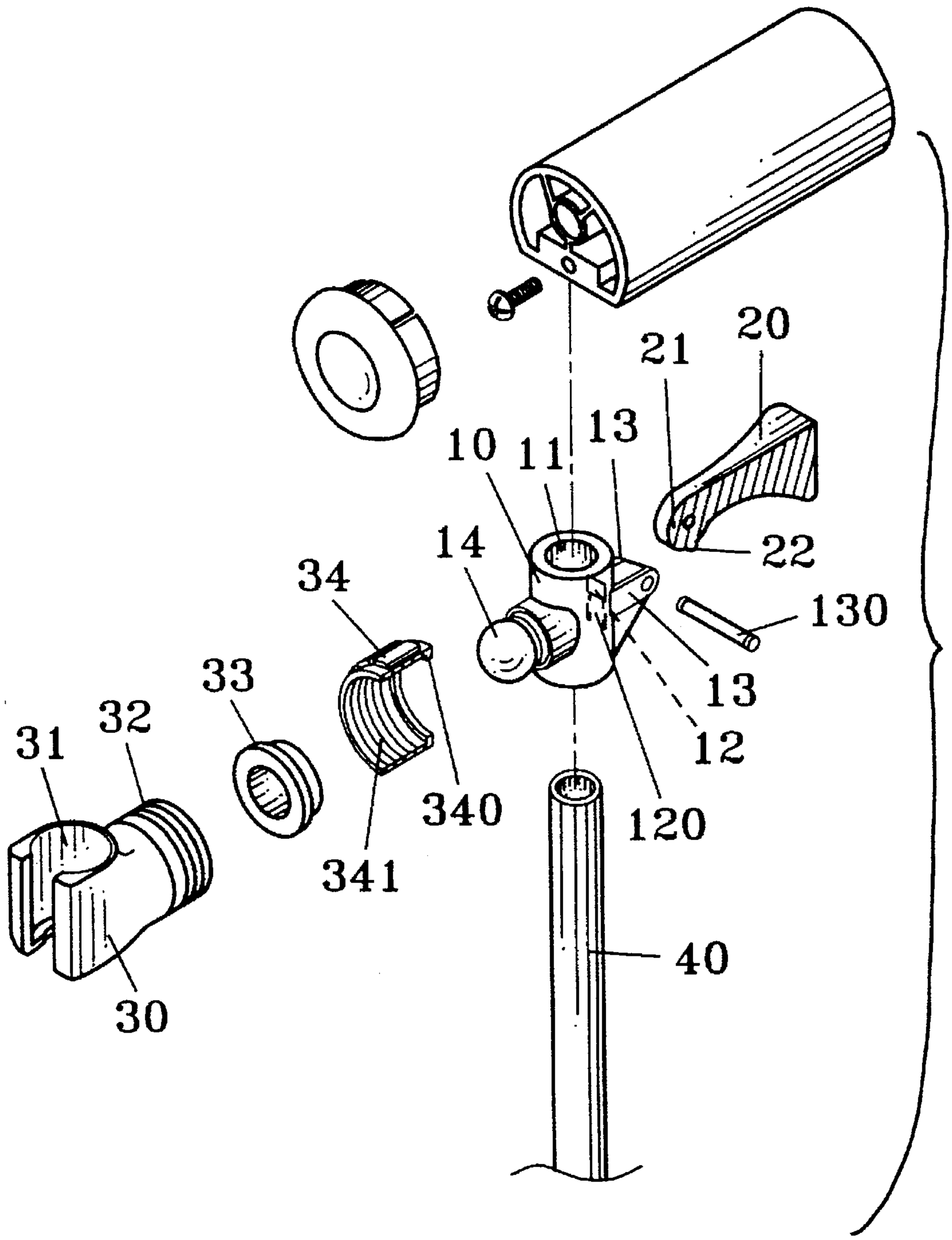



FIG.3

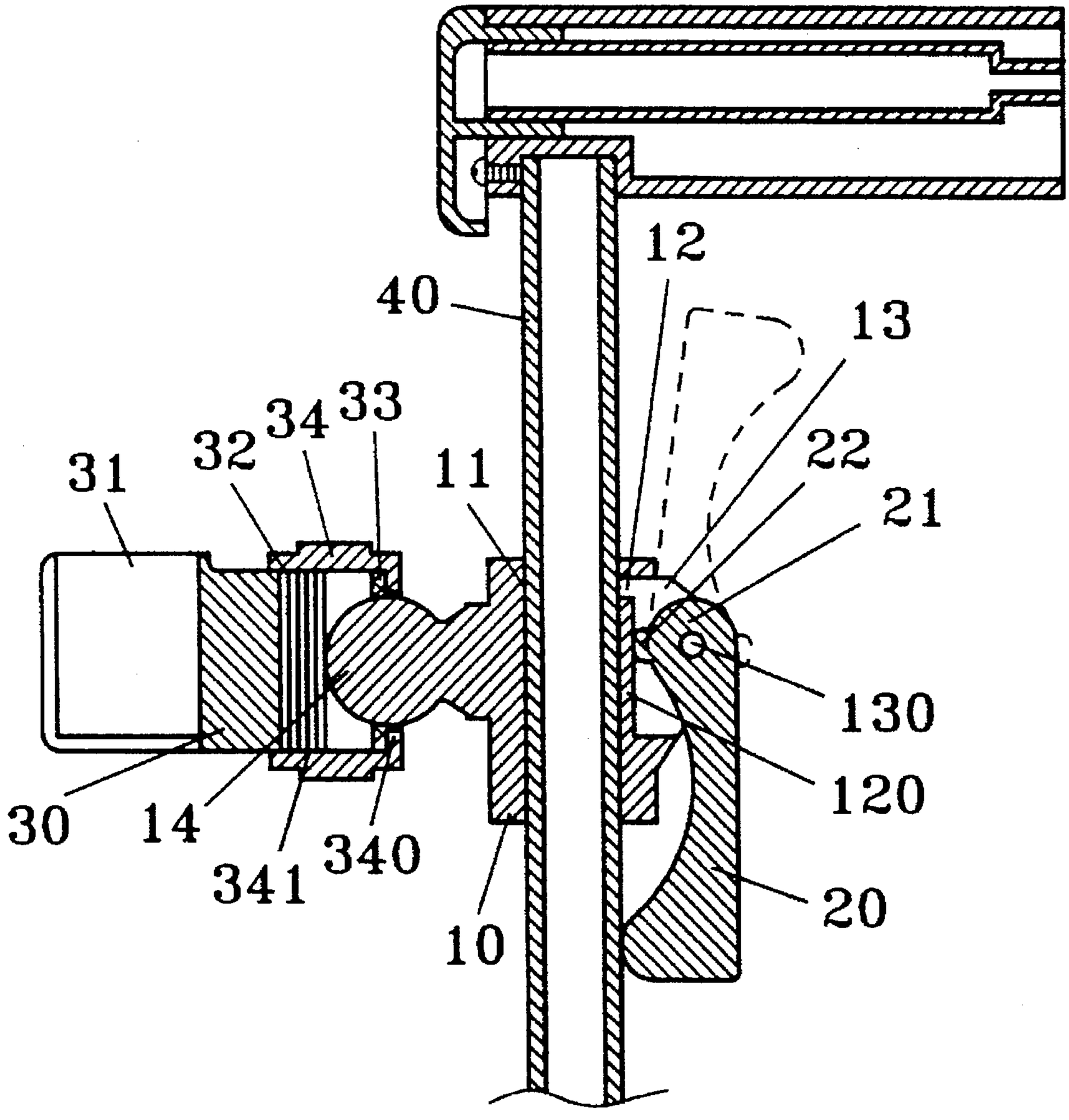



FIG.4

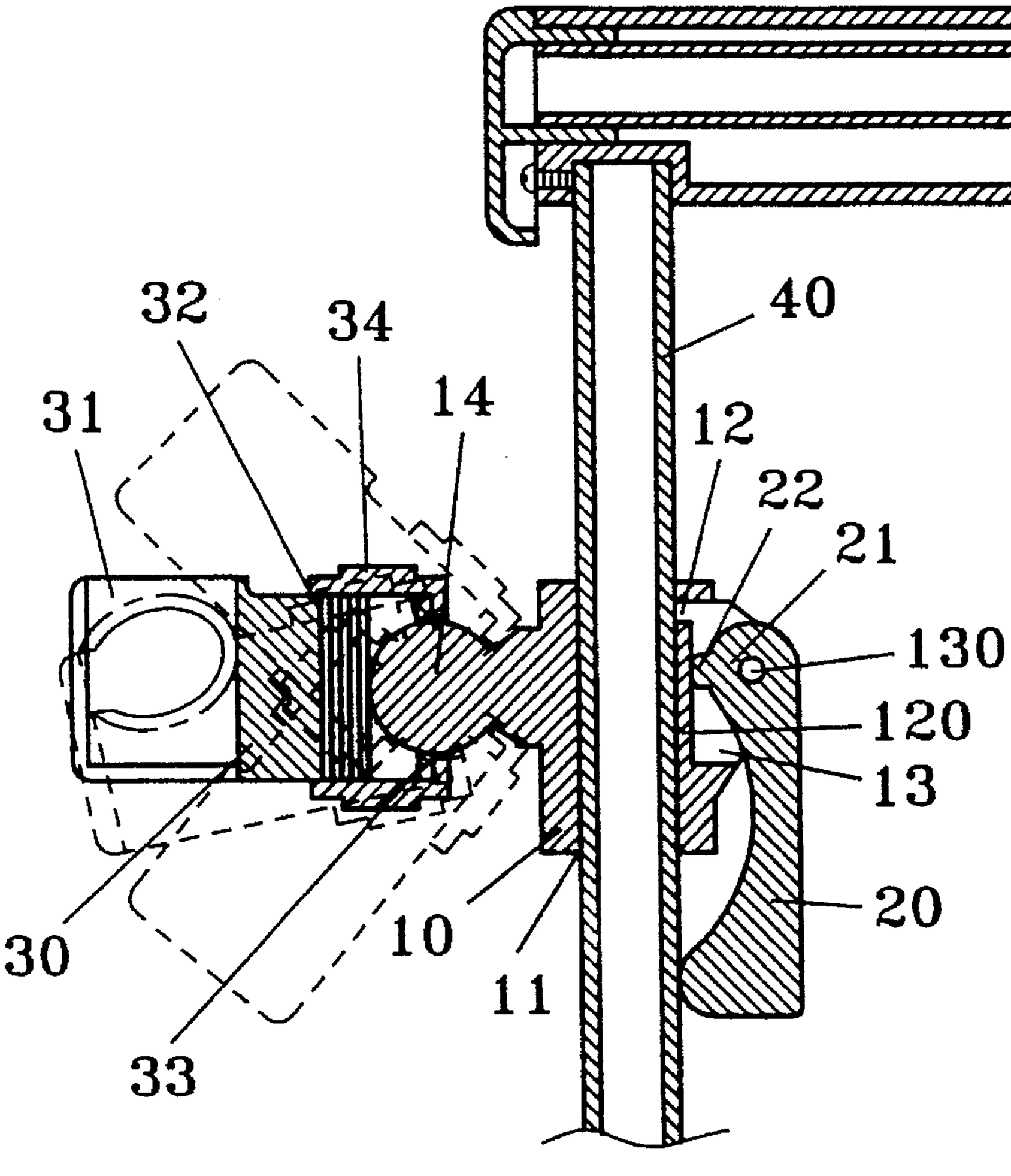



FIG.5

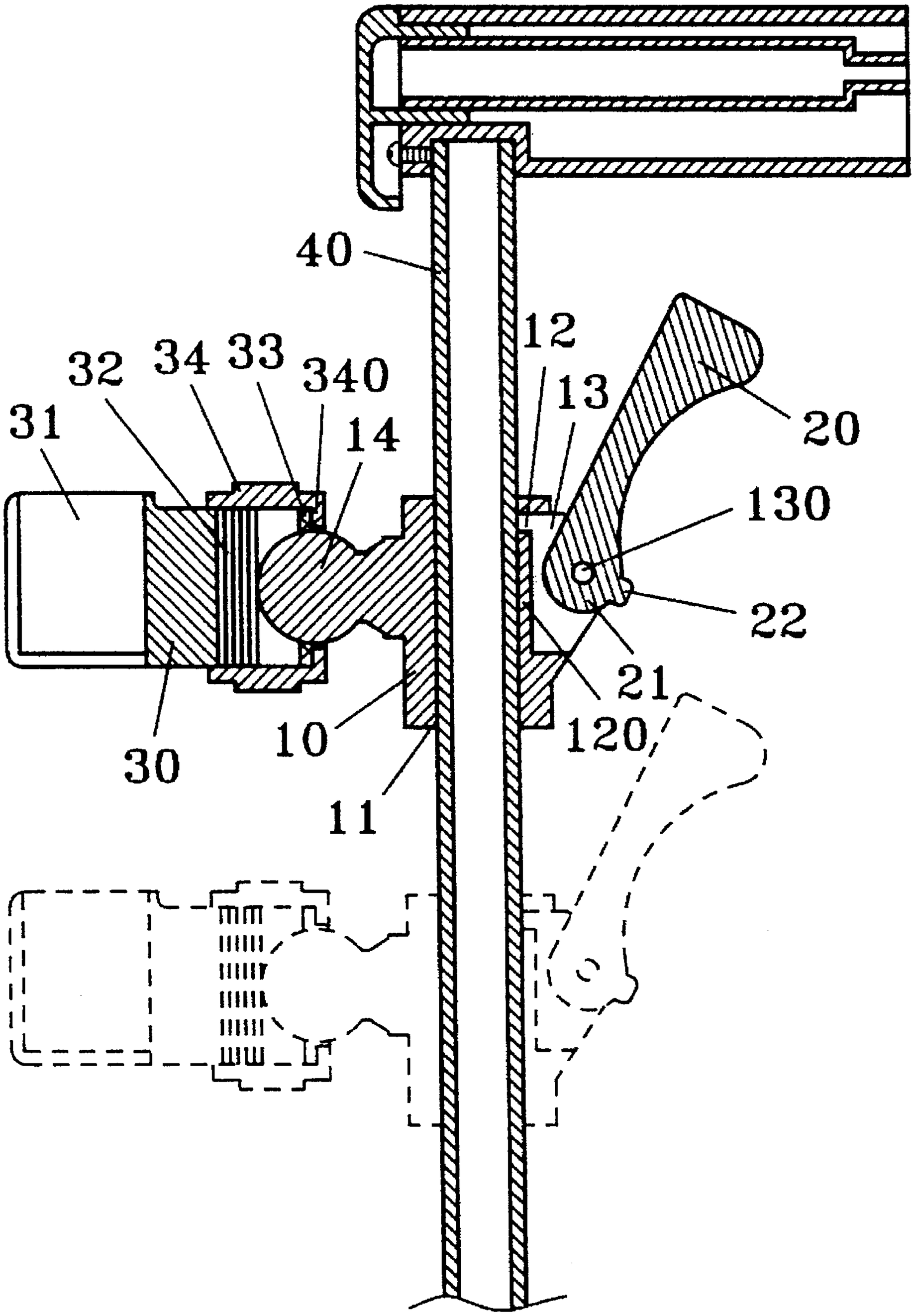



FIG.6

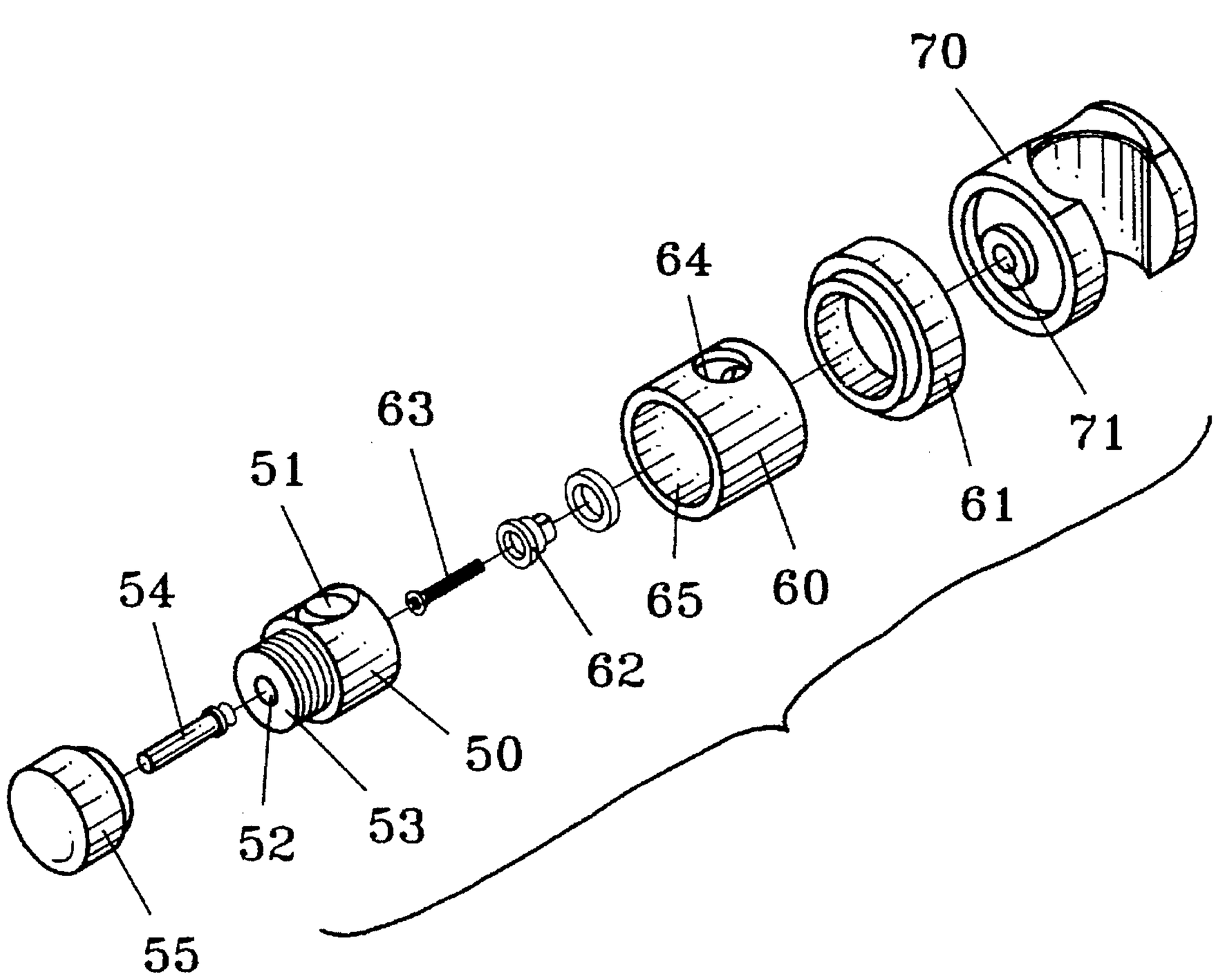



FIG.7
PRIOR ART

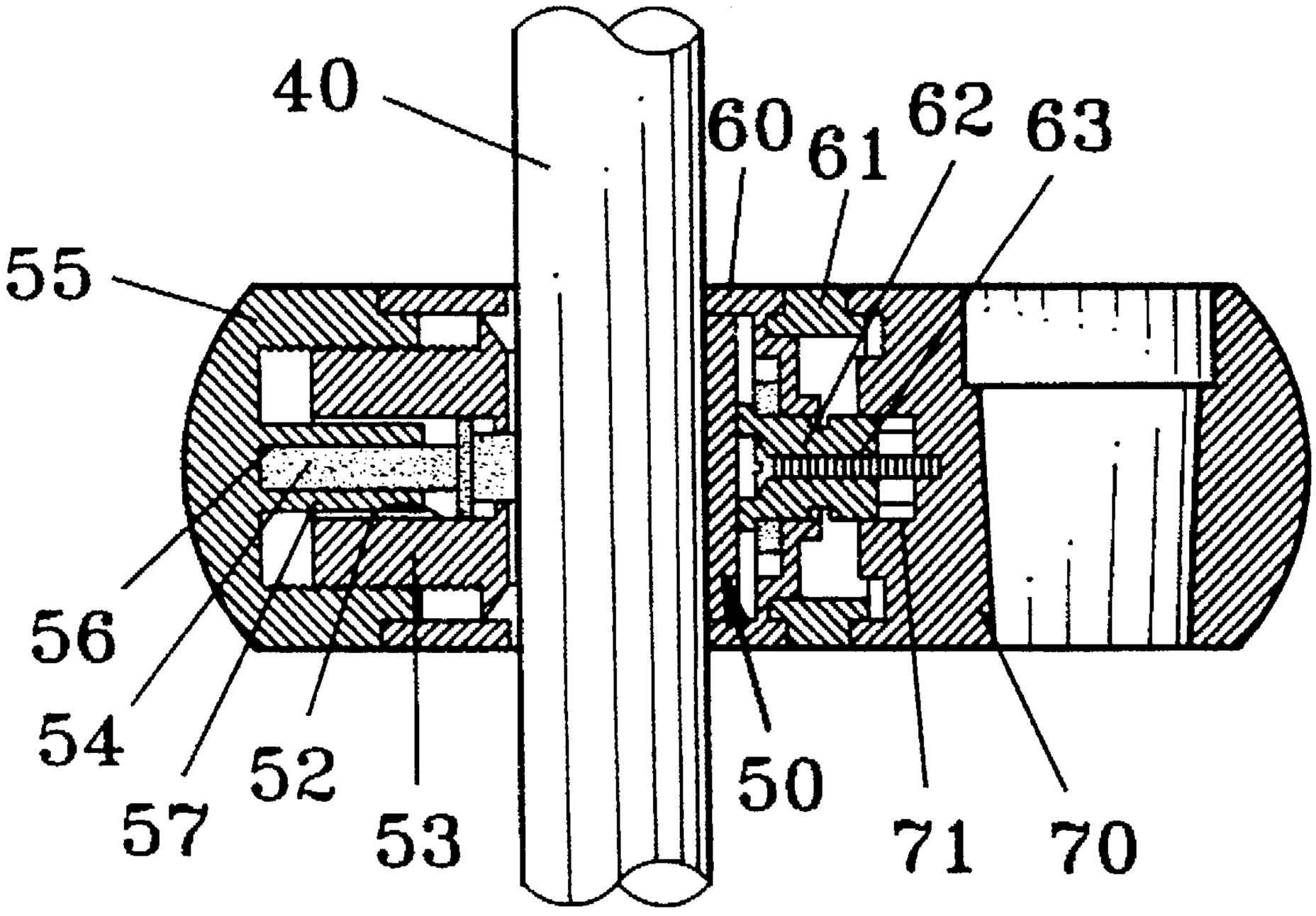



FIG.8
PRIOR ART

# HOLDER ASSEMBLY FOR A SHOWER HEAD

## BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a holder assembly for a shower head and, more particularly, to a holder assembly which is rotationally adjustable in addition to an adjustable height thereof.

2. Description of the Related Art

A shower head is a common utensil in bathrooms. A hand-held shower head provides a more convenient use than a fixed one, yet a disadvantage thereof is that a holder for holding a shower arm of the shower head is generally fixed to a wall of the bathroom. An adjustable holder assembly has been proposed to solve the above-mentioned problem, and a typical one is shown in FIGS. **7** and **8** of the drawings. The holder assembly includes a positioning member **50** which includes a transverse bore **51** through which a bar **40** extends, and a protrusion **53** projecting from a side of the positioning member **50** and having a threaded outer periphery, two ends of the bar **40** being securely attached to the wall of the bathroom. A longitudinal bore **52** is defined in the protrusion **53** and communicates with the transverse bore **51**. An end cap **54** includes a threaded inner periphery for engaging with the threaded outer periphery of the protrusion **53** and a stub **57** defining a blind hole **56** therein. As shown in FIG. **8**, a pin **54** is inserted into the longitudinal bore **52** and then the end cap **55** is mounted around the protrusion **53** by threading connection with a first end of the pin **54** bearing against an end wall of the stub **57** and with a second end of the pin **54** bearing against an outer periphery of the rod **40**. A housing **60** is mounted around the positioning member **50** and has an end abutting against the end cap **55**, as shown in FIG. **8**. The housing **60** and has a compartment **65** for receiving the positioning member **53** via a first open side thereof and a bore **64** which aligns with the transverse bore **51** of the positioning member **50** received therein, thereby allowing the rod **40** to extend therethrough. Upon rotational movements of the end cap **55**, the pin **54** is either moved rightwardly (from the direction of FIG. **8**) to frictionally hold the rod **40** in position or moved leftwardly (also from the direction of FIG. **8**) to allow adjustment of the positioning member **51** relative to the rod **40**.

A shower arm holder **70** is mounted to the other side of the housing **60** via a connecting ring **61**. As shown in FIG. **7**, the shower arm holder **70** includes a hole **71** in a side thereof, and a positioning element **62** having a longitudinal hole is mounted to a side wall of the second side of the housing **60**, the side wall having a hole (not labeled) aligning with the hole **71**. A screw **63** is extended through the positioning element **62** and has a distal end received in the hole **71** to attach the shower arm holder **70** to the housing **60**.

A disadvantage of the above-mentioned shower head holder assembly is that too many elements are used and the structure is too complicated, resulting in difficulty in manufacture and assembly, wasting labor hours and increasing costs. A further disadvantage of the above-mentioned shower head holder assembly is that, when rotational adjustments are required (e.g., the shower arm holder **70** is not in an upright position, or an angular position of the positioning member **50** with respect to the rod **40**), the end cap **55** has to be loosened to allow rotational movements of the positioning member.

Therefore, there has been a long and unfulfilled need for an improved holder assembly for shower heads to mitigate and/or obviate the above problems.



## SUMMARY OF THE INVENTION

A holder assembly for a shower arm of a shower head in accordance with the present invention includes a positioning body defining a vertical bore therein through which a vertical rod extends, which, in turn, is mounted to a wall of a bathroom. The positioning body includes an opening defined in an outer periphery thereof and in communication with the vertical bore, a pair of lugs formed on the outer periphery thereof and between which the opening is defined, and a lever pivotally connected to the lugs and including an operative end with an eccentric operative edge. The opening is substantially U-shaped, thereby forming a flexible piece therein. The eccentric operative edge exerts a force on the flexible piece so as to be frictionally held in position on the vertical rod when the lever is in a first, secured position. The positioning body is movable relative to the vertical rod both in a longitudinal direction of the vertical rod and in an angular direction with respect to the vertical rod when the eccentric operative edge is in a second, released position in which the eccentric operative edge disengages from the flexible piece.

The holder assembly further includes a connecting part extending from the outer periphery of the positioning body, a shower arm holder comprising a holder ring for removably holding a shower arm, and a means for attaching the shower arm holder to the connecting part of the positioning body.

In accordance with one aspect of the invention, the connecting part includes a ball-like structure, the shower arm holder includes a stub having a threaded outer periphery and a holder ring for removably holding the shower arm, and the attaching means includes a sleeve having an inwardly-projecting annular edge formed on a first end thereof and an open second end with inner threading and a retainer ring having a diameter slightly smaller than a diameter of the ball-like structure and made of resilient material. The ball-like structure is partially received in the first end of the sleeve and the retainer ring is mounted around the ball-like structure and adjacent to the inwardly-projecting annular edge to prevent the ball-like structure from disengaging from the sleeve, and the stub of the shower arm holder is threadedly connected with the open second end of the sleeve, thereby being attached to the ball-like structure and being universally adjustable relative to the ball-like structure.

Other objects, advantages, and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a shower head holder assembly in accordance with the present invention mounted to a vertical rod in a bathroom;

FIG. **2** is a cross-sectional view of the shower head holder assembly in accordance with the present invention and the associated vertical rod;

FIG. **3** is an exploded view of the shower head holder assembly in accordance with the present invention and the associated vertical rod;

FIG. **4** is a cross-sectional view similar to FIG. **2**, illustrating operation of a lever of the shower head holder assembly in accordance with the present invention;

FIG. **5** is a cross-sectional view similar to FIG. **2**, illustrating rotational adjustments of a holder of the shower head holder assembly in accordance with the present invention;

FIG. **6** is a cross-sectional view similar to FIG. **2**, illustrating adjustment in height of the shower head holder assembly in accordance with the present invention;

FIG. **7** is an exploded view of a shower head holder assembly according to prior art; and

FIG. **8** is a cross-sectional view of the shower head holder assembly in FIG. **7**.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. **1** to **6**, and initially to FIG. **1**, a holder assembly for shower heads in accordance with the present invention is mounted to a vertical rod **40**, which, in turn, is mounted to a wall of a bathroom (not shown), via two bars **42** and **44** respectively connected to upper and lower ends thereof. The holder assembly includes a substantially cylindrical positioning body **10** defining a vertical bore **11** therein through which the vertical rod **40** extends. An opening **12** (see FIG. **2**) is defined in an outer periphery of the positioning body **10** and communicated with the vertical bore **11**. The opening **12** is substantially U-shaped, thereby forming a flexible piece **120** therein.

Referring to FIGS. **2** and **3**, a pair of lugs **13** are formed on the outer periphery of the positioning body **10** and between which the opening **12** is defined. A lever **20** is pivotally connected to the lugs **13** by a pin **130** and includes an operative end **21** with an eccentric operative edge **22**, operation of which will be described later.

Still referring to FIGS. **2** and **3**, a connecting part, e.g., a ball-like structure **14** extends from the outer periphery of the positioning body **10**, and a shower arm holder **30** is attached to the ball-like structure **14** by a connecting means. The shower arm holder **30** includes a connecting portion, e.g., a stub **32** having a threaded outer periphery, and a substantially C-shape holder ring **31** for removably holding a shower arm of a shower head (not shown). The connecting means includes a sleeve **34** having an inwardly-projecting annular edge **340** formed on a first end thereof and an open second end with inner threading **341**. The connecting means further includes a retainer ring **33**.

In assembly, the lever **20** is placed between the lugs **13** and the pin **130** is extended through the lugs **13** and the lever **20**, thereby pivotally connecting the lever **20** to the lugs **13**. The sleeve **34** receives a part of the ball-like structure **14** via the first end thereof, and the retainer ring **33** is inserted into the sleeve **34** via the open second end of the sleeve **34** and then positioned around the ball-like structure **14** at a diametrical position of the ball-like structure **14**. It is appreciated that the retainer ring has a diameter slightly smaller than a diameter of the ball-like structure **14**, yet it is made of resilient material so as to pass over the ball-like structure **14** to bear against the inwardly-projecting annular edge **340**, thereby preventing the sleeve **34** from disengaging from the ball-like structure **14**. Thereafter, the shower arm holder **30** engages with the second end of the sleeve **34** by threading connection between the threaded stub **32** and the threading **341**.

The holder assembly is fixed relative to the vertical rod **40** when the lever **20** is in a first, secured position shown in FIG. **2**, in which the eccentric operative edge **22** of the operative end **21** exerts a force to the flexible piece **120** to frictionally hold the vertical rod **40** in the positioning body **10**. When the lever **20** is shifted to a second, released position shown by phantom lines in FIG. **4**, the eccentric operative edge **22** disengages from the flexible piece **120**, thereby allowing a height adjustment, as shown in FIG. **6**. It is appreciated that



adjustment of an angular position (in a horizontal plane) of the positioning body **10** can also be achieved when the lever **20** is in the released position.

Referring to FIG. **5**, the shower arm holder **30** is readily adjustable with respect to the positioning body **10** provided that a relatively large force, which is sufficient to overcome a frictional force between the sleeve **34** and the ball-like structure **14**, is applied. As shown by the phantom lines (the middle one) in FIG. **5**, the shower arm holder **30** is rotatable about a horizontal axis (as seen from the direction in FIG. **5**). The shower arm holder **30** is also rotatable about an axis which is perpendicular to a plane on which the drawings sheet locates (shown by upper and lower phantom lines in FIG. **5**). In other words, the ball-like structure **14** and the sleeve **34** act as a universal joint, providing a convenient operation in adjustment of the shower arm holder **30**.

According to the above description, it is appreciated that the holder assembly of the present invention utilizes the lever **20** with the eccentric operative edge **22** to provide the required fixing function as well as easy adjustment, and the universal joint between the sleeve **34** and the ball-like structure **14** also provides a convenient adjustment. The overall structure is simple and easy for assembly, thereby reducing the labor hours and costs.

Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.

What is claimed is:

**1**. A holder assembly for a shower arm of a shower head, comprising:

a positioning body defining a vertical bore therein through which a vertical rod is adapted to extend, which, in turn, is mounted to a wall of a bathroom, the positioning body comprising an opening defined in an outer periphery thereof and in communication with the vertical bore, a pair of lugs being formed on the outer periphery of the positioning body and between which the opening is defined, a lever being pivotally connected to the lugs and including an operative end with an eccentric operative edge, the opening being substantially U-shaped, thereby forming a flexible piece therein; the eccentric operative edge exerts a force on the flexible piece so as to be frictionally held in position on the vertical rod when the lever is in a first, secured position, and the positioning body is movable relative to the vertical rod both in a longitudinal direction of the vertical rod and in an angular direction with respect to the vertical rod when the eccentric operative edge is in a second, released position in which the eccentric operative edge disengages from the flexible piece;

a connecting part extending from the outer periphery of the positioning body and including a ball-like structure;

a shower arm holder comprising a stub having a threaded outer periphery and a holder ring for removably holding a shower arm; and

a means for attaching the shower arm holder to the connecting part of the positioning body, the attaching means including a sleeve having an inwardly-projecting annular edge formed on a first end thereof and an open second end with internal threading and a retainer ring having a diameter slightly smaller than a diameter of the ball-like structure and made of resilient material, said ball-like structure being partially received in the first end of the sleeve and having the

retainer ring mounted adjacent to the inwardly-projecting annular edge of said sleeve to prevent the ball-like structure from disengaging from the sleeve, said stub of said shower arm holder being in threaded engagement with the open second end of the sleeve,



thereby being attached to the ball-like structure and being universally adjustable relative to the ball-like structure.

* * * * *